

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Proposals from Entities Seeking to be	)	DA 09-2479
Designated TV Band Device Database Managers	)	
	)	
Unlicensed Operation in the TV Broadcast	)	ET Docket No. 04-186
Bands	)	
	)	

**COMMENTS OF KEY BRIDGE GLOBAL LLC**

Key Bridge Global is pleased to file our comments regarding the proposals submitted on January 4, 2010 to administer a TV bands database.<sup>1</sup> In these comments we wish to highlight and address four important aspects of administrator selection:

- Preserving fair competition in all aspects of TV bands administration is critically important
- Neutrality is mandatory for successful co-existence of licensed and unlicensed users
- This is a serious undertaking and only serious proposals should be considered
- The Commission should authorize two or more administrators without delay

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<sup>1</sup> In response to *Public Notice (DA-09-2479) Unlicensed Operation in the TV Broadcast Bands (ET Docket 04-186)* released November 25, 2009.

## **The Commission should not abandon competition**

March 2010 will mark the six-year anniversary since the initial TV bands Notice of Proposed Rulemaking.<sup>2</sup> In that time, through extensive collaboration with industry, the Commission has developed a comprehensive set of rules and an implementation strategy that embraces market forces and competition to seek robust protection of existing wireless services, non-discriminatory access to available unlicensed spectrum and minimal cost to consumers. These Rules are now published in the Federal Register under Part 15, Subpart H - Television Band Devices.

Co-existence of unlicensed devices and licensed broadcast services has never been implemented on the scale anticipated to result from this proceeding. While significant progress was made by Key Bridge and others in 2009 to implement Subpart H-compliant systems, development and infrastructure are still required to ensure the business continuity of existing broadcast services and reliable, predictable access to unlicensed spectrum by new, prospective unlicensed operators.

A cornerstone of the Commission's market-based strategy is competition among multiple database operators. The Commission's market-based approach to TV bands administration already has generated significant interest and investment by industry.<sup>4</sup> Nine companies, including Key Bridge, responded to the Commission's Request for Proposal and offered to develop and operate Rules-complaint TV bands databases if authorized. Key Bridge believes that there are many benefits of competition among databases operators including limits on any single entity's pricing power and built-in incentives for rapid feature development and accommodation of diverse, possibly unanticipated industry requirements.

Key Bridge is not alone in supporting competition between multiple database administrators.<sup>5</sup> We believe that a successful TV bands ecosystem can only thrive in such a competitive

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<sup>2</sup> *Notice of Proposed Rulemaking* (FCC 04-113) released May 25, 2004. This document also references the December 2002 Notice of Inquiry. Anecdotal, we understand the concept of unlicensed operation in the TV broadcast bands has been under discussion since at least the first Clinton Administration.

<sup>4</sup> In 2009, the Key Bridge Team (including Oracle, Sun, Fortinet, AWS and Equinix) completed development of its prototype TV bands database system while Spectrum Bridge Inc. began white space field trials in southern Virginia with Dell and Microsoft.

<sup>5</sup> See joint comment by WSdb LLC, Frequency Finder, Inc., KB Enterprises LLC, Key Bridge Global LLC, Spectrum Bridge, Telcordia Technologies, ET Docket 04-186 (filed Feb 9, 2010) at 2 ("The Commission's present

environment: where incumbents can be robustly protected and emerging unlicensed products and services can be aggressively promoted.

We are therefore surprised and disappointed that some applicants suggest the Commission now abandon this market-based momentum and instead grant one party a structural advantage over TV bands administration by creating a “single authoritative clearinghouse”.<sup>6</sup> As proposed, a “clearinghouse” run by Google, Neustar and Comsearch would stand between the Commission and all other TV band administrators, exercising near complete control over the administration of TV bands spectrum but adding little to no discernable value. Instead, this solution-in-search-of-a-problem would simply determine which registered entity records are protected, the methods and algorithms used to calculate protected service contours and the calculation of channel lists.<sup>7</sup> It could also establish artificial pricing levels that are ultimately borne by consumers.

Under the Google / Neustar / Comsearch model, other database administrators would essentially become retail agents of their de-facto monopoly.<sup>8</sup> Such structural advantage undermines competition and defeats the purpose of authorizing multiple administrators. It is also contrary to the public interest. Monopoly power over TV bands would significantly stifle investment in TV bands administration and infrastructure. It could also directly harm consumers by unnecessarily raising administrative costs and thereby reducing broadband service deployment.

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strategy of competition among administrators will best serve the public.”). Also see *Ex Parte* by Dell Inc. and Microsoft Corp. (filed August 27, 2009) at 2 (“...the Commission should not limit database administration to one provider.”) Also see *Unlicensed Operations in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices, Below 900 MHz and in the 3 GHz Band, Second Report and Order and Memorandum Opinion and Order* at 221 (“We recognize the interests of Google and other TVBD proponents in ensuring that database services be made available on a fair and low cost (or no cost) basis and believe that providing for authorization of more than one party to operate a TV bands database will serve that purpose.”).

<sup>6</sup> See *Comsearch Proposal to be Designated as a TV Band Device Database Manager* (Comsearch Proposal), *Proposal by Google Inc. to Provide a TV Band Database Management Solution* (Google Proposal) and *Neustar Proposal for Designated TV Band Device Database Manager* (Neustar Proposal) (all filed Jan. 4, 2010), Also see Neustar Inc. ET Docket 04-186 *Comments of* (Neustar Comments) (filed February 4, 2010).

<sup>7</sup> *Comsearch Proposal* at 48, *Google Proposal* at 14, *Neustar Proposal* at 24.

<sup>8</sup> Key Bridge does not use the term “monopoly” casually. Google’s intention to provide low cost or free service is only possible through a deliberate subsidy from its other, un-related lines of business. See *Google Proposal* at 13 (“Google has no current plans to rely on user fees”)

Furthermore, this approach raises concerns about accountability. As described, there would be no mechanism for the FCC, other administrators, wireless ISPs, incumbents or the public to influence or affect “clearinghouse” implementation or policy. This makes the question “What happens when the clearinghouse makes a mistake?” more than rhetorical.<sup>9</sup>

Unfortunately, we believe our many concerns about the proposed “clearinghouse” are well founded. Neustar’s alleged history of anticompetitive behavior in number portability administration hardly instills confidence that North American Portability Management LLC (NAPM) is a useful model for TV bands administration.<sup>10</sup> Instead, it raises serious questions about Google, Neustar and Comsearch’s collective desire to compete within “a competitive ecosystem of databases.”<sup>11</sup> We believe there is ample reason view the “clearinghouse” proposal as an attempt to restrict competition and gain unfair structural advantage over other administrators.

If, as Lawrence Strickling states, the “Commission’s task is to seek maximum reliance on market forces where possible and deploy government oversight where needed,”<sup>12</sup> then the Commission should not abandon competition or undermine its own and the public’s future capability to

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<sup>9</sup> See *Google Proposal* at 7. (“Database functions will not include resolution of claims of interference”)

<sup>10</sup> See *Petition of Telcordia Technologies*, WCB Docket 07-149 and 09-109. (filed Jan. 13, 2010) Key Bridge’s interpretation of the salient points in this petition is that, contrary to the Commission and Congress’s original intent, the North American Number Portability (NANP) database has only one administrator: Neustar. In their petition, Telcordia claims that, under Neustar’s exclusive contract, NANP administrative costs are “at least 20%” higher than they would be with competition, and that Neustar is able to use its privileged position to gain unfair advantage when entering other markets like E.164 number mapping. Telcordia also claims that Neustar abuses its authority to impose what should be public policy decisions while evading the Commission’s influence, oversight or redress.

<sup>11</sup> *Neustar Comments* at 4, *Google Proposal* at 17, *Comsearch Proposal* at 46. We are also unimpressed with the Wireless Medical Telemetry Services (WMTS) database as a model for TV bands administration. The WMTS frequency coordination database contains about 4,500 fixed geographic locations, whereas a TV bands database system must accommodate potentially tens of millions of mobile, dynamic TV band devices.

<sup>12</sup> See *Ex Parte Submission of the United States Department of Justice on GN Docket No. 09-51* (filed Jan. 4, 2010) (DOJ Ex Parte)

influence the TV bands marketplace.<sup>13</sup> The Commission should not re-write the rules to accommodate an arguably powerful special interest, and it should reject any consideration of a “clearinghouse.” Instead, the Commission should redouble its efforts to ensure that no one prospective administrator enjoys a structural competitive advantage over any other.

### **Database administrators must be neutral**

Key Bridge believes that unlicensed channels represent by analogy for TV band devices what IP addresses are to the personal computer – the fundamental building blocks of a broadband communications infrastructure. However, the full set of devices reliant upon the effective and fair administration of spectrum is not limited to Fixed, Mode I and Mode II cognitive radios. It also includes wireless microphones, over-the-air television receivers, public safety and commercial radios, medical telemetry devices, video assist devices, etc.

From the start of this proceeding the Commission has had to balance the business interests of licensed-primary and unlicensed-secondary spectrum users, whose plant, equipment and business operations are not designed to accept interference, with proponents of new unlicensed operations seeking to occupy that same spectrum using part 15 devices that may accept interference. These competing economic interests highlight the need for fair and neutral spectrum administration.

Another often overlooked but critically important aspect of TV bands spectrum administration is the mandatory disclosure of potentially sensitive equipment and ownership data by unlicensed devices. While disposing of their required responsibilities the TV bands administrator will necessarily become privy to detailed use, location and ownership information of most all TV band devices and must not be allowed to use this information to disadvantage one hardware manufacturer, network operator or interested party over another.<sup>14</sup> This also highlights the

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<sup>13</sup> We note that the Commission is not precluded from authorizing additional administrators at any time in the future. In our opinion, this capability is the Commission’s primary relief mechanism to ensure that administration is price competitive and responsive to consumer needs. This mechanism would be eliminated in the case of a single authoritative clearinghouse or if one administrator is not responsive to market forces. i.e. if their TV bands operations are provided for free and subsidized from other lines of business

<sup>14</sup> The administrator may learn, for example, the make, model, serial number and location (by inference) of all Mode-I consumer electronics through their equipment authorization requirement. It may also learn the ownership details of all Fixed TVBDs and potentially of Mode-II TVBDs. Key Bridge considers this information sensitive and

strategic need for neutral spectrum administration and the practical requirement for robust information security.

For these reasons, Key Bridge believes that neutral administration is a mandatory requirement for successful unlicensed operation in the TV broadcast bands. We agree with Commissioner McDowell that TV bands should be “administered by a neutral third party ... without business interests....”<sup>15</sup> We also agree with President Obama that the “... key to strengthening ... entrepreneurship and innovation ... [are] rules to ensure ... fairness and openness....”<sup>16</sup>

With this in mind, Key Bridge is surprised that Google considers itself an acceptable spectrum administrator. Google, a prospective manufacturer of TV band consumer electronics, is neither a neutral nor a disinterested party.<sup>17</sup> While Key Bridge speaks for no one but ourselves, we find it difficult to believe that Google’s many competitors in the consumer electronics market would find it acceptable that Google should be entitled to learn the make, model, serial number, location of use and ownership details about their products.

Key Bridge believes that authorizing Google to be a TV bands administrator would create a powerful deterrent against other consumer electronics manufacturers to adopt and innovate in the TV bands. For this reason, the Commission should not authorize Google to administer a TV bands database.

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private. We secure it with the same protection technologies and practices employed by Fortune 100 firms to protect their own financial data. See *Key Bridge Proposal* at 157 and *Key Bridge Ex Parte* at 7 plus *Product Sheets* at 4 and 17 (filed Jan 23, 2010). Also see *Oracle Database Security* at <http://www.oracle.com/us/products/database/security> and *Fortinet Database Security* at [http://www.fortinet.com/solutions/database\\_security.html](http://www.fortinet.com/solutions/database_security.html)

<sup>15</sup> See The Washington Post “*FCC's McDowell on broadband plan, white spaces, Google as administrator*” [http://voices.washingtonpost.com/posttech/2010/01/fcc\\_mcdowell\\_on\\_broadband\\_plan.html](http://voices.washingtonpost.com/posttech/2010/01/fcc_mcdowell_on_broadband_plan.html)

<sup>16</sup> *Remarks by the President on Innovation and sustainable Growth*, Hudson Valley Community College, Troy, NY, Sept. 21 2009, [http://www.whitehouse.gov/the\\_press\\_office/Remarks-by-the-President-on-Innovation-and-Sustainable-Growth-at-Hudson-Valley-Community-College/](http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-Innovation-and-Sustainable-Growth-at-Hudson-Valley-Community-College/)

<sup>17</sup> See *Google, Authorized Ex Parte Contact* (filed March 21, 2008) at 2. “Android-powered handsets ... would be an excellent match for TV white space.”

Key Bridge is also surprised that Neustar subcontracted the entirety of their TV bands development to Shared Spectrum Corporation.<sup>18</sup> While we respect Neustar’s technical capacity to operate a database, we note that the core business of Shared Spectrum Corporation (SSC) is to license their spectrum sensing technologies and related intellectual properties to cognitive radio manufacturers. We therefore find it similarly difficult to imagine how such manufacturers could view SSC, and Neustar by proxy, as a disinterested party or neutral recipient of their product detail, use and ownership information.<sup>19</sup>

Authorizing Neustar to administer a TV bands database could also have a deleterious effect on TV band device innovation and development. For this reason, the Commission should not authorize Neustar to administer a TV bands database.

### **Incomplete or non-compliant proposals should be disqualified**

TV bands spectrum administration is a very serious undertaking.<sup>20</sup> While the authorization process may not be a Federal procurement exercise, selecting the right parties by the FCC will have a tremendous influence on existing wireless markets and possibly determine the success or failure of co-existence as a strategy for future spectrum use.

Key Bridge believes the Commission’s proposal requirements were clearly articulated and that there was plenty of time to construct a response, as evidenced by the nine proposals received.<sup>21</sup> We are therefore surprised at the relative weakness and lack of detail in many of the documents

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<sup>18</sup> See *Neustar Proposal – Response to ET Docket No. 04-18* at 14: “Neustar is partnering with SSC to produce reference code for protected contour calculation”

<sup>19</sup> SSC’s principal business is to license and enforce intellectual property patents, potentially against the very companies and consumers that would be obligated to register with and disclose privileged information to Neustar.

<sup>20</sup> Fire and Police public safety radio networks will rely upon effective interference protection in 13 major US cities, while broadcast television service revenues (in the TV bands) topped \$19 billion in 2009 with projections to reach \$24 billion in 2010. See *SNL Kagan Financial* at <http://www.snl.com>. Revenues from other current TV band products and services are additive to this baseline. Going forward, Key Bridge, Telcordia and WSdb each estimate the market for unlicensed TV band products and services to also reach the multi-billion dollar range within five years. See *Telcordia Proposal* at 9, *WDdb Proposal* at 1(b)-3 and *Key Bridge Ex Parte* (filed Jan 23, 2010)

<sup>21</sup> See *Key Bridge Ex Parte* (filed Jan 23, 2010) at 13, 14, 15, 16 for an enumerated list of the proposal document’s technical and content requirements.

submitted. In our opinion, if this were a Federal procurement, several proposals would be summarily rejected as non-complaint or effectively incomplete. From this perspective, it is not surprising that Google, Neustar and Comsearch, companies who submitted particularly weak proposals, should request special consideration. However, if organizations with their respective resources and capabilities cannot muster the effort to explain in detail how they will provide channel lists on a non-discriminatory basis, secure the system and its data, protect the privacy and confidentiality of consumers and commercial customers, or adequately protect current operations, can they really be trusted to administer almost 300 MHz of spectrum? We believe the answer is No.

Successful applicants should demonstrate not only the technical ability to support new, unlicensed wireless services, but also a credible intention and capability to protect current existing operations. We observe however that several proposals are little more than a restatement of requirements with an elaborate promissory note for future development.<sup>22</sup> When the Commission requires that proposals “shall describe” or “must detail”, Key Bridge believes the respondent’s document should provide, at minimum, sufficient material to instill confidence in their understanding of the requirement and ability to dispose the full responsibilities of TV bands administration.<sup>23</sup>

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<sup>22</sup> Google’s promise to “develop an acceptable business model should it become necessary” and Frequency Finder’s proposal of “a database implementation to fulfill all the requirements” are particularly vacuous. See *Google Proposal* at 13 and *Frequency Finder Proposal* at 2.

<sup>23</sup> Responses should also be technically competent. For example, Google’s reliance on pre-calculated TV service contour points, provided by the Commission’s Media Bureau as a courtesy, calls in to question Google’s grasp of the undertaking and their seriousness about interference avoidance. See *Google Proposal* at 7 and *TV Service Contour Data Points* at [http://www.fcc.gov/ftp/Bureaus/MB/Databases/tv\\_service\\_contour\\_data/readme.html](http://www.fcc.gov/ftp/Bureaus/MB/Databases/tv_service_contour_data/readme.html). Google should recognize that “contour data is only generated once for each application ID number [and] the possibility exists that subsequent corrections to the CDBS database might not be reflected in the service contours herein.” Forgoing contour calculations also begs the question of how Google intends to protect non-television entities like LP-AUX, Land mobile radio, TV Translators, Fixed broadcast auxiliary links, Cable head ends, etc. Google is also factually incorrect to state that the status of Mode-I TVBDs need not be verified. See *Google Proposal* at 11 and 47 CFR § 15.715 (j), which applies to all TVBDs.

Key Bridge encourages the Commission to objectively review all nine proposals against the technical requirements in Part 15, Subpart H plus the clearly stated response requirements in DA 09-2479 and reject those that are conspicuously incomplete or non-compliant.

### **Clarifying microphone eligibility is not a prerequisite for administrator authorization**

In our conversations with wireless network service providers, hardware manufacturers and public interest groups, Key Bridge perceives that uncertainty around wireless microphone eligibility is a lingering concern and presently represents the greatest unknown about unlicensed spectrum availability.

As a neutral prospective TV bands database administrator, Key Bridge has no opinion about which entities should or should not be entitled to register and receive microphone use protection. We are encouraged however to see the Commission's recent move to provide clarity on this matter.<sup>24</sup> Our opinion is that clarity will benefit all parties: it will assure entitled protections and provide confidence to wireless network operators and consumers that TV band spectrum availability will be predictable and fair.

As stated in our proposal, the Key Bridge Team's flexible system architecture and modular software implementation can quickly accommodate whatever rules the Commission adopts with regard to microphone eligibility.<sup>25</sup> We therefore do not believe that resolving microphone eligibility should be considered a prerequisite for authorizing TV bands database administrators.

### **Conclusion**

The Commission's market-based approach to TV bands implementation is already yielding positive results, with nine companies offering to provide an end-to-end database solution. Unfortunately three applicants: Google, Neustar and Comsearch, seek to change the rules at the last minute and create structural competitive advantages for themselves in the form of a "clearinghouse". Key Bridge views this as a transparent attempt to create a de-jure monopoly

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<sup>24</sup> *Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones*, ET Docket 10-24

<sup>25</sup> See *Key Bridge, Proposal to Administer a TV Bands Database* at 48 (filed Jan 4, 2010)

over TV bands administration. We urge the Commission in the strongest terms not to advantage one administrator over any other.

Key Bridge furthermore believes that several applicants, Google and Neustar in particular, could discourage interest, investment and wireless innovation if approved. Key Bridge suggests this emerging market's initial conditions must be carefully calibrated for long-term success, and that the Commission should therefore only approve database administrators that are neutral, transparent, and technically competent and who have no incentive to advantage one business interest over another.

Lastly, Key Bridge encourages the Commission to move quickly: to satisfy pent-up demand for wireless spectrum and to unlock industry's substantial resources that are waiting to invest and to innovate in the TV bands. The Commission should objectively evaluate the submitted proposals and approve at minimum two or more TV band database administrators without delay. We believe one of those should be Key Bridge.

Respectfully submitted,

/s/

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